Petr Stepanov

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> Ph.D. graduate in physics with a focus in GUI desktop software development for data analyses. More than 5 years in website and web application development. Strong user interface (UI) and user experience (UX) design skills.

Summary of Qualifications

- Strong Object Oriented Programming (OOP), debugging and bug fixing skills (C++, Java, Python). Knowledge of modern IDEs (Eclipse, XCode, VSCode).
- Capable of integrating and utilizing third-party libraries into existing codebase (Qt, CERN ROOT, Geant4).
- Experience with delivering production ready software written in compiled languages (CMake, GNU Makefiles).
- Daily Linux user with enhanced BASH scripting skills and High-Performance Computing (HPC) environment experience.
- 5+ years of user interface programming (UI) with Model-View patterns (MVC, MVP).
- 3+ years in building responsive web apps with modular JavaScript, HTML, and CSS. Hands-on experience with Angular and React frameworks.
- 6+ years of UI and UX wireframing and interactive prototyping skills (Figma, Sketch, Adobe Creative Suite) for web and mobile applications.

Work Experience

C++ Software Developer
Thomas Jefferson National Laboratory (JLab), Newport News, VA, USA.   **Jul 2020 - Dec 2022**

- Coded a Geant4-based sumulation for studying the optimal light guide length (range 0-10 cm) for the EM calorimeter used in the Electron-Ion-Collider (EIC) project. Link to GitHub.
- Used Machine Learning (ML) techniques to perform binary classification of thousands of signals from a data acquisition (DAQ) setup. Link to GitHub.
- Applied CERN ROOT framework (C++) to perform statistical analysis of a significant amount (over 100 GB) of the raw experimental data of the Kaon LT experiment at JLab. Link to GitHub.
- Utilized SLURM functionality on the High-Performance Computing (HPC) environment to execute series of the simulations in parallel. This reduced the wall time by more than 10 times.
- Proposed and implemented RAMDisk functionality on the development environment. This led to an over 50% increase in source code indexing time.

Software Developer • Postdoctoral Researcher
Catholic University of America (CUA), Washington, DC, USA.   **Jul 2020 - Dec 2022**

- Programmed a Geant-4 computer simulation (C++, CMake, Eclipse IDE, gdb) to study performance of a novel scintillation material for EIC, Brookhaven National Lab. Link to GitHub.
- Visualized energy deposition profiles and calculated energy resolutions for variety of detector assemblies.
- Enhanced debugging of the core library source code led to the publishing of more than 10 bug reports on the ROOT (C++) forum.

Software Developer • Research Assistant
Bowling Green State University (BGSU), Bowling Green, OH, USA.   **Aug 2014 - May 2020**

- Wrote three desktop GUI programs for spectra fitting and interpretation (C++, CMake, ROOT, Qt, Java)
  - GitHub repositories contain over 10k lines of code in total: TLIST Processor, SW Calculator, RooPositron.
  - Extended default ROOT GUI library (Qt-based) to support the MVP design pattern.
- Developed static website (Hexo, Gulp, Bootstrap) and visual identity for the SelimLab research group. The website has a 99% Google performance rank and features 700 ms time to interactive metrics.
- Maintained local Apache HTTP server physics.bgsu.edu hosting over 10 websites at the BGSU.
- Created website for the ICPA-18 international conference with registration (over 150 users) and payment system workflow (WordPress, PHP, Recurly.js), and landing pages for events.

Frontend Developer, UI/UX Designer • Freelance   **Sep 2012 - May 2020**

- Designed and built an online e-commerce store [Sticker Store LLC](#) with a static website generator (Figma, Hexo, Snipcart, Bootstrap, SASS, Express.JS, EJS, Node.js).
  - Improved the Google PageSpeed Insights metrics (CLS, LCP) up to 97%.
  - Created a recursive script to export over 300 products from YAML file to Google Merchant.
  - Optimized SEO. The project reached over 1400 organic monthly users.
- Made iOS application (Swift, UIkit, storyboards) for the [We.Team](#) messenger (more than 3k monthly downloads in AppStore). Participated in cloud-based messenger development with enhanced file sharing capabilities (HTML, React JS, SASS).
- Migrated the landing page for [Sweetbridge](#) company from WordPress to Jekyll static site generator (Ruby, CSS). This resulted in a 70% improvement in the page load time.
- Developed the front-end part (Angular.js, HTML, LESS) for [Lili Social](#) network.
  - Assisted with iOS mobile application (Ionic).
  - Enabled SEO crawling of over 1000 Angular.js pages with Google bot.
- Web design.
  - Designed logos, UI/UX prototypes (Figma, Sketch, Illustrator) and branding identity for over [10 different companies](#).
  - Converted numerous design assets and mockups into responsive HTML and CSS.
  - Mocked up and integrated dozens of cross-browser responsive email templates.

Education

Bowling Green State University (BGSU) • Ohio, USA   **Aug 2014 - May 2020**

Ph.D. in Photochemical Sciences • GPA 3.423. Novel developments in positron annihilation spectroscopy techniques—from experimental setups to advanced processing software. [View manuscript](#).

British Higher School of Art and Design (BHSAD) • Moscow, Russia   **Dec 2011 - Feb 2012**

Three-month intensive course in Graphical Design and Visual Communications. Lectures and hands-on experience in graphic design and user interfaces.

National Research Nuclear University (MEPhI) • Moscow, Russia   **Sept 2004 - Feb 2011**

B.S. and M.S. in Solid State Physics. Defect studies of neutron-irradiated nuclear power plant vessel steels by means of positron annihilation spectroscopy.

Professional Networks

- Find examples of my code [on GitHub](#) (50+ repositories).
- Discover my professional contacts [on LinkedIn](#) (200+ connections).
- Check out my UI design portfolio [on Dribbble](#) (50+ shots).

Interests

- Hosting an open-source project for keyboard remapping on Linux [300+ stars on GitHub](#).
- Contributing to the C++ open source framework ROOT. Created two shared libraries to facilitate data analysis. Links to GitHub: [CanvasHelper](#) and [RootUtils](#).